

ABSTRACT

A semiconductor device is manufactured by the steps of generating a film forming gas by setting a flow rate ratio of H_2O to any one of a silicon-contained organic compound having a siloxane bond and a silicon-contained organic compound having a CH_3 group to 4 or more and adjusting a gas pressure to 1.5 Torr or more, applying a power to the film forming gas to generate a plasma thereof so as to react it, and thus forming a low-dielectric insulating film (62) on a substrate (61), plasmanizing a process gas containing at least any one of He, Ar, H_2 or deuterium, and bringing the low-dielectric insulating film (62) into contact with the plasma of the process gas.